Northwest **Power** and **Conservation** Council

September 6, 2017

MEMORANDUM

TO: **Council Members**

FROM: **Ben Kujala**

SUBJECT: **Update on Idaho Power Integrated Resource Plan**

BACKGROUND:

Presenter: Phil DeVol, Lead Planning Analyst Power Supply, Idaho Power

Summary: Phil DeVol will come to present on the Idaho Power 2017 Integrated Resource Plan (IRP). Idaho Power's IRP examines the utilities demand for energy over the next 20 years and the best approaches for the utility to meet that demand. The plan is updated every two years and includes a series of public meetings that help guide the planning process. The 2017 IRP was submitted to the Idaho Public Utilities Commission and the Public Utility Commission of Oregon in June 2017.

More Info: https://www.idahopower.com/AboutUs/PlanningForFuture/irp/default.cfm

851 S.W. Sixth Avenue, Suite 1100
Portland, Oregon 97204-1348
www.nwcouncil.org

Steve Crow
Executive Director

503-222-5161
800-452-5161
Fax: 503-820-2370

Idaho Power
2017 Integrated Resource Plan

Northwest Power and Conservation Council

Council Meeting – Spokane, WA

September 12, 2017

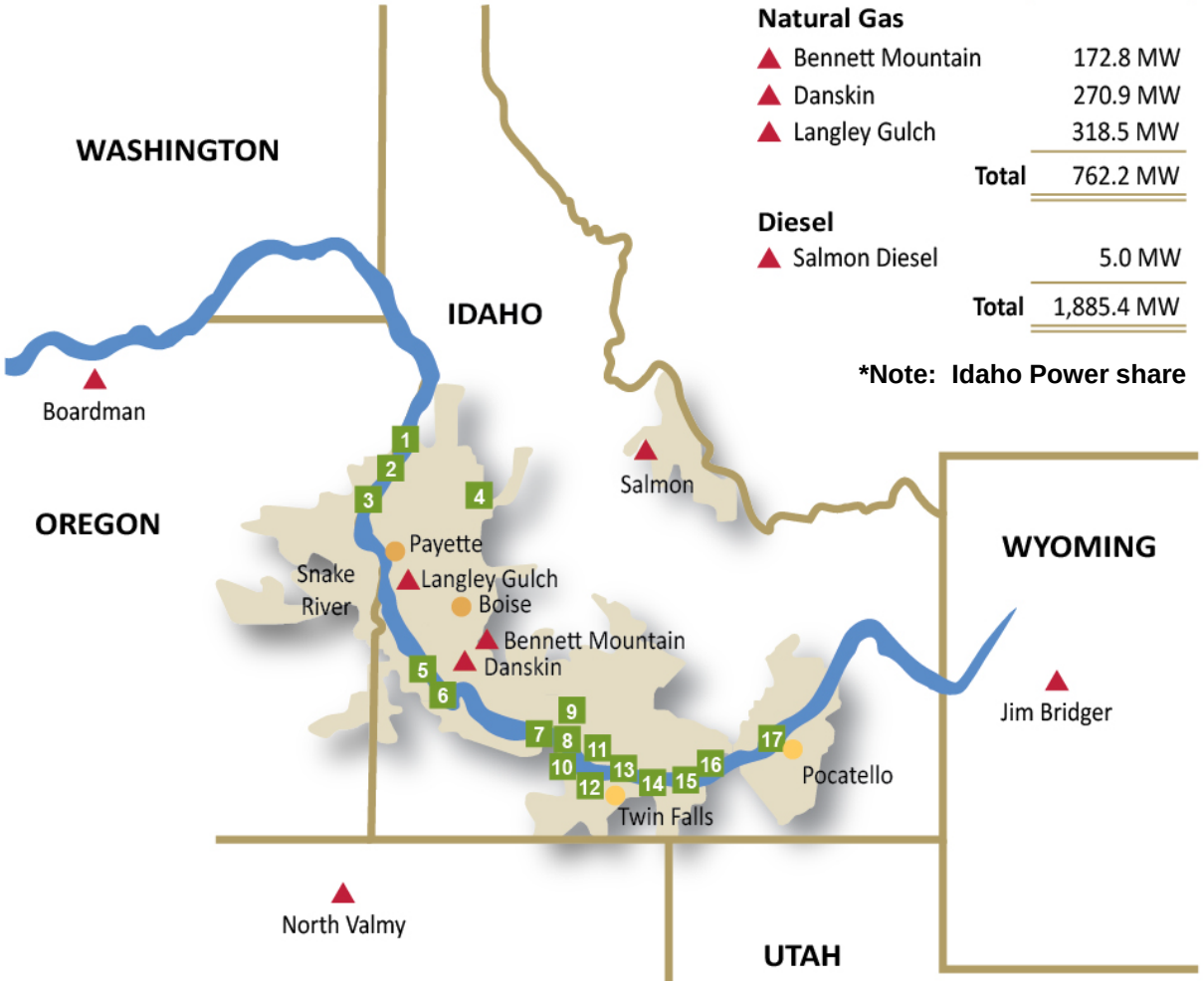
2017 IRP

- Goals
  - Identify sufficient resources to reliably serve the growing demand for energy within Idaho Power's service area throughout the 20-year planning period
  - Ensure the selected resource portfolio balances cost, risk, and environmental concerns
  - Give equal and balanced treatment to supply-side resources, demand-side resources, and transmission resources
  - Involve the public in the planning process in a meaningful way
- Planning period → 2017-2036

Idaho Power Generating System

Hydroelectric Facilities and Nameplate Capacities

1	Hells Canyon	391.5 MW
2	Oxbow	190.0 MW
3	Brownlee	585.4 MW
4	Cascade	12.4 MW
5	Swan Falls	27.2 MW
6	C. J. Strike	82.8 MW
7	Bliss	75.0 MW
8	Lower Malad	13.5 MW
9	Upper Malad	8.3 MW
10	Lower Salmon	60.0 MW
11	Upper Salmon	34.5 MW
12	Thousand Springs	8.8 MW
13	Clear Lake	2.5 MW
14	Shoshone Falls	12.5 MW
15	Twin Falls	52.9 MW
16	Milner	59.4 MW
17	American Falls	92.3 MW
	Total	1,709.0 MW

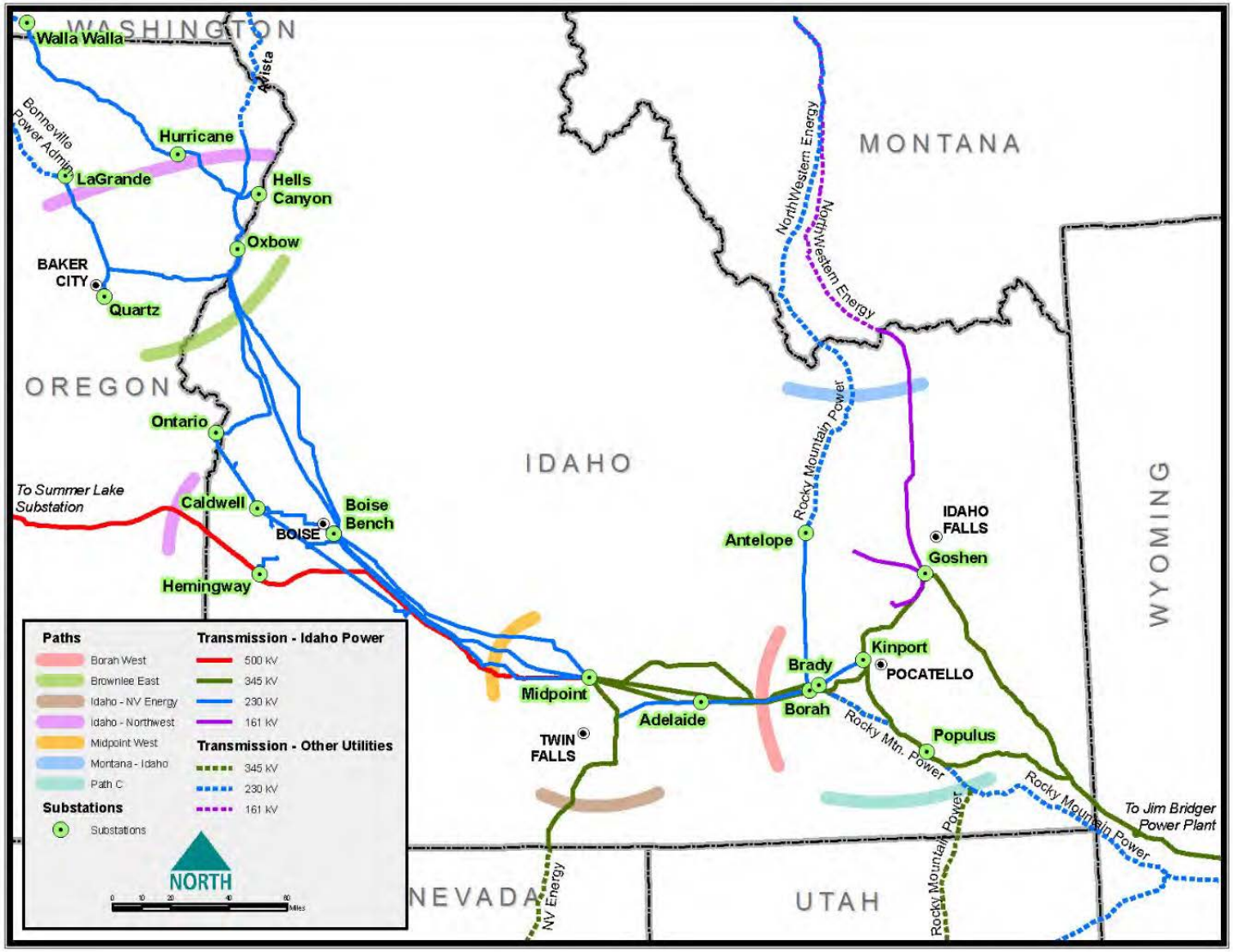


Thermal Facilities And Capacities

Coal	
Jim Bridger	770.5 MW*
North Valmy	283.5 MW*
Boardman	64.2 MW*
Total	1,118.2 MW
Natural Gas	
Bennett Mountain	172.8 MW
Danskin	270.9 MW
Langley Gulch	318.5 MW
Total	762.2 MW
Diesel	
Salmon Diesel	5.0 MW
Total	1,885.4 MW

***Note: Idaho Power share**

Idaho Power
Transmission System



Load and Resource Balance

- Idaho Power generation
- Transmission
  (off-system purchases)
- Energy contracts
- Demand-side resources

- Load

2017 IRP – Load Forecast

- Growth rates
  - Average energy → 0.9% per year
  - Peak-hour → 1.4% per year
- Add ≈220k customers 2017-2036
- Load > Resource?

2017 IRP – Key Considerations

- Jim Bridger units 1 and 2
  - Environmental retrofit investments vs. early retirement alternatives
- Boardman-to-Hemingway (B2H) transmission line
  - B2H vs. alternative resources
- Portfolio design

	Primary Portfolio Element(s)		
Treatment of Jim Bridger Units 1 and 2	**B2H**	**Solar PV/Natural Gas**	**Natural Gas**
Invest in SCR	P1	P2	P3
Retire Unit 1 in 2028 and Unit 2 in 2024	P4	P5	P6
Retire Unit 1 in 2032 and Unit 2 in 2028	P7	P8	P9
Retire Unit 1 in 2022 and Unit 2 in 2021	P10	P11	P12

2017 IRP – Portfolio Analysis

2017 IRP portfolios, NPV years 2017-2036 ($000s)

Treatment of Jim Bridger Units 1 and 2	Primary Portfolio Element(s) B2H	Solar PV/ Natural Gas	Natural Gas	Average	Rank
Invest in SCR	$6,400,696	$6,497,505	$6,530,856	$6,476,352	3
Retire Unit 1 in 2028 and Unit 2 in 2024	$6,338,683	$6,566,567	$6,508,242	$6,471,164	2
Retire Unit 1 in 2032 and Unit 2 in 2028	$6,335,771	$6,503,524	$6,483,000	$6,440,765	1
Retire Unit 1 in 2022 and Unit 2 in 2021	$6,400,507	$6,579,769	$6,671,510	$6,550,595	4
Average	$6,368,915	$6,536,842	$6,548,402		
Rank	1	2	3		

P7 timeline

Date	Resource	Installed Capacity (MW)	Peak-Hour Capacity (MW)
2026	B2H	500, 200 (Apr–Sep, Oct–Mar transfer capacity)	500
2031	Reciprocating engines	36	36
2032	Reciprocating engines	36	36
2033	CCCT (1x1)	300	300
2035	Reciprocating engines	54	54
2036	Reciprocating engines	54	54
	Total	**980**	**980**

Portfolio Analysis and Uncertainty

- Uncertainty analysis
  - Natural gas price
  - Customer load
  - Hydro production
- Qualitative risk

2017 IRP – Action Plan (2017-2021)

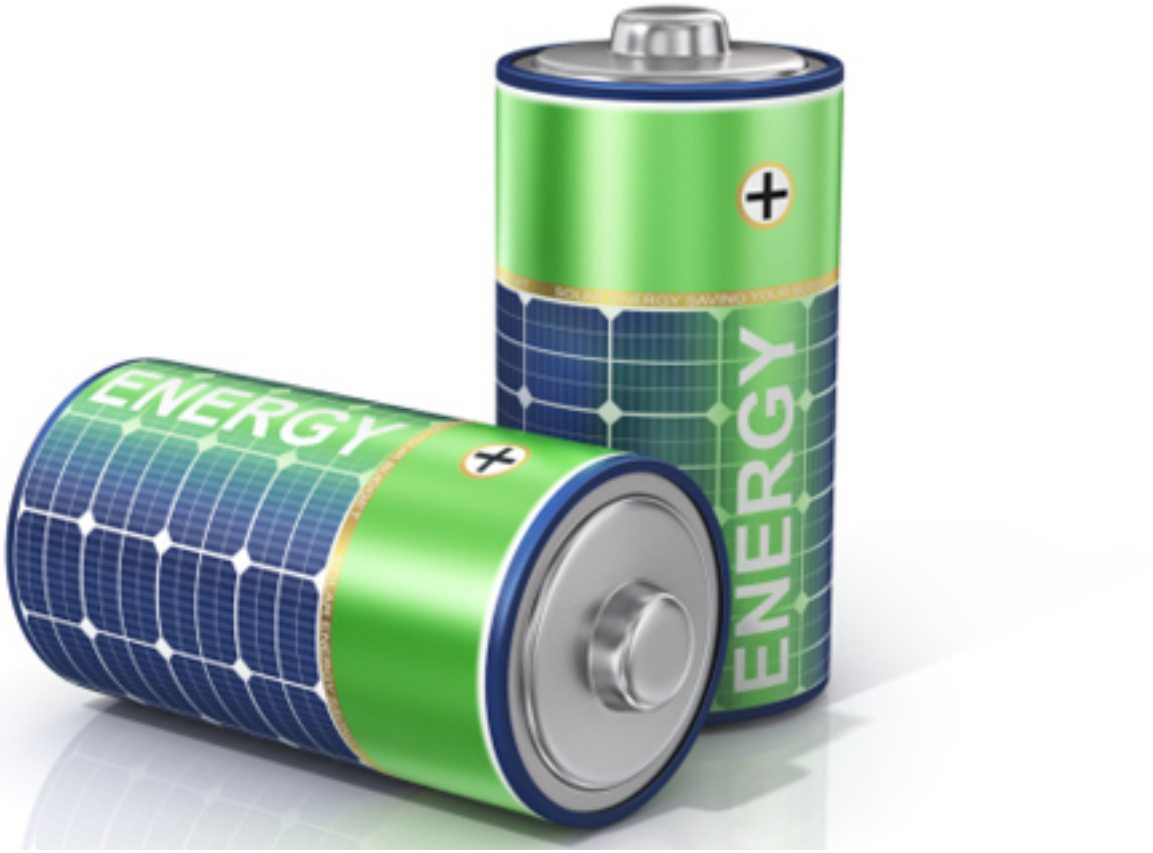
- EIM
- North Valmy Unit 1
- Jim Bridger units 1 and 2
- B2H
- Boardman
- Gateway West
- Energy efficiency
- Carbon emission regulations
- North Valmy Unit 2

Coal

Natural Gas

Variable Generation

Energy Storage



Transmission

Questions?

Contact info:

Phil DeVol

Power Supply Planning

Idaho Power Company

pdevol@idahopower.com